

VS.SYSTEM™

VS SYSTEM - UPRIGHT TYPE

MODEL NO: MDS-UP-US

OPERATION MANUAL

Nintendo®

WARNING

This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

WARNING

Use of non-Nintendo parts or modifications of your Nintendo game circuitry may adversely affect the safety of your game, and may cause injury to your players.

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WARNING

Check before plugging the game in.

I. LOCATION SETUP

VS. System — Upright is shipped ready for operation. Please check the following to insure proper operation.

- (1) Check the exterior of the game for shipping damage, dents, chips, or broken parts.
- (2) Remove the screws on the rear door panel.
- (3) Unlock and open the rear door panel, as well as the service door, and inspect the interior of the game as follows:
 - a) **Check that all the plug-in connectors are firmly connected.**
 - b) **Check all main subassemblies (monitor, power supply, control panel, etc.) to ensure they are securely mounted.**

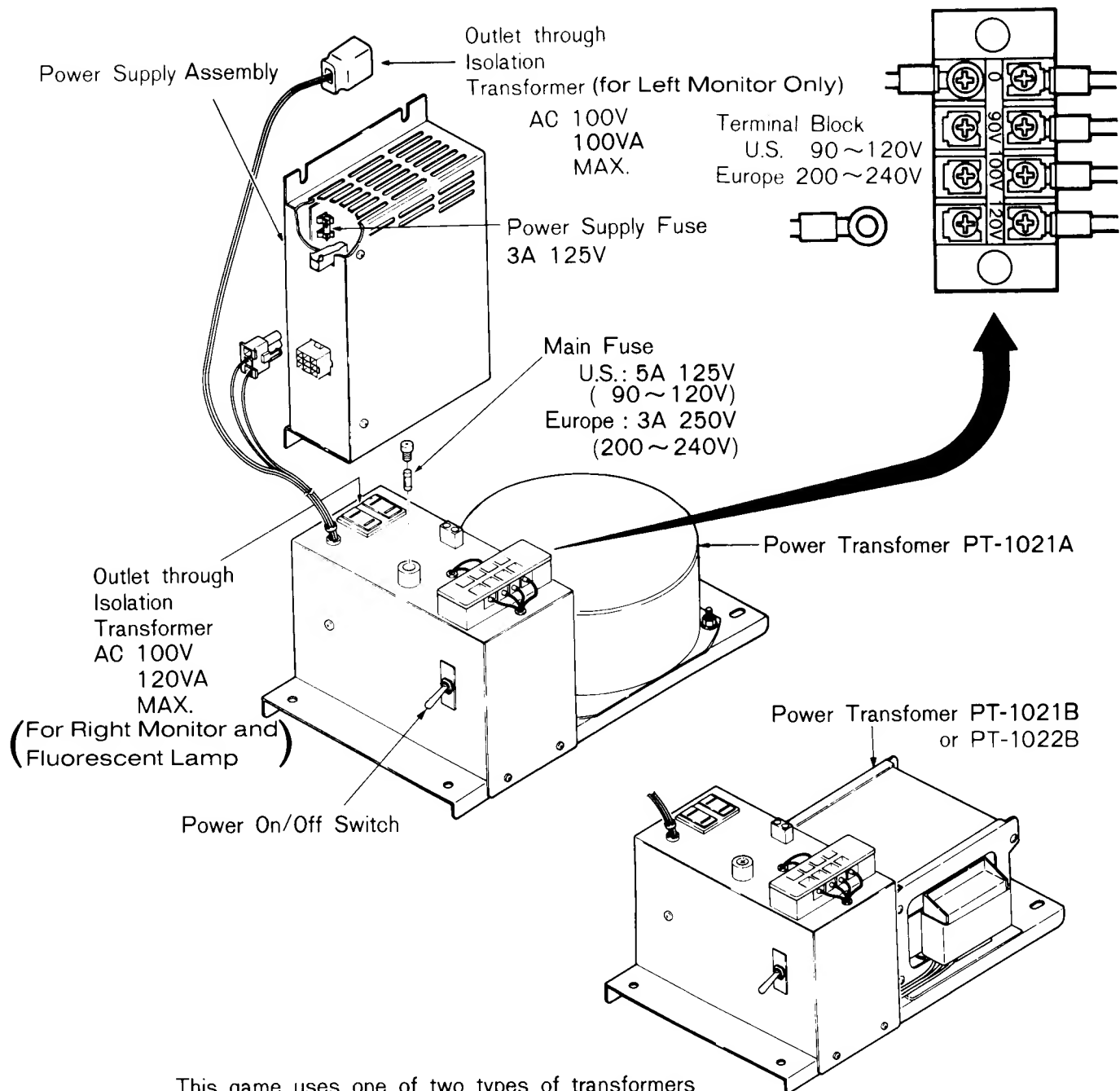
A. Game installation

(1) Requirements

Amperage:	1.8 AMPS
Temperature:	0 to 38 degrees Celsius (32 to 100 degrees Fahrenheit)
Humidity:	Not over 95% relative
Space required:	42 $\frac{1}{4}$ " x 33 $\frac{1}{2}$ "
Height:	68 $\frac{1}{4}$ "

B. Voltage selection

Before plugging in your game, make sure the terminal block of the power transformer is correct for your location's line voltage. See figure 1.



This game uses one of two types of transformers which are different in appearance but identical in function. The two types can be interchanged.

Fig. 1 Power Supply Assembly, Power Transformer and Voltage Selection

C. Power on/off switch

A power on/off switch is located in the rear of the game at the bottom left of the cabinet.

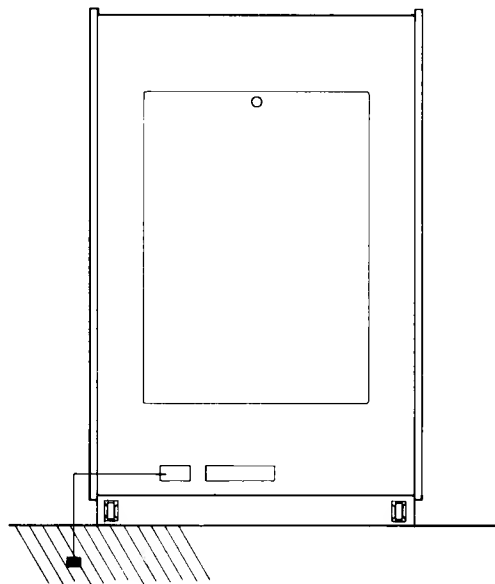
WARNING

Please be sure you use a grounded outlet for this game. Failure to do so may result in destruction of electronic components.

D. Grounding of Game (Use only if 3 wire outlet is unavailable.) See Fig. 2

- (1) A grounding wire should be connected to a grounding bar or a metal pipe which is firmly inserted into the ground.
- (2) Do not connect the grounding to a water pipe, because polyvinyl-chloride pipes are sometimes used in water lines, and the electronic continuity to the ground may be interrupted.
- (3) Absolutely do not connect the grounding wire to a gas pipe, as this can be extremely dangerous.

Fig. 2



II. ADJUSTMENT

A. Adjustment of Video Monitor

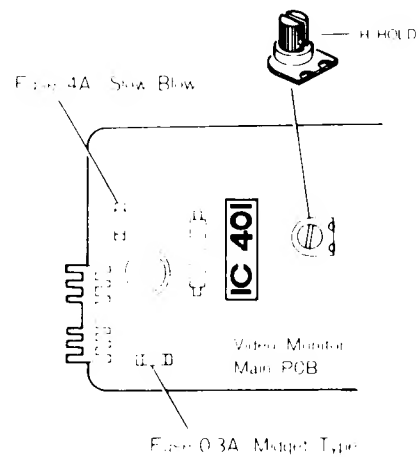
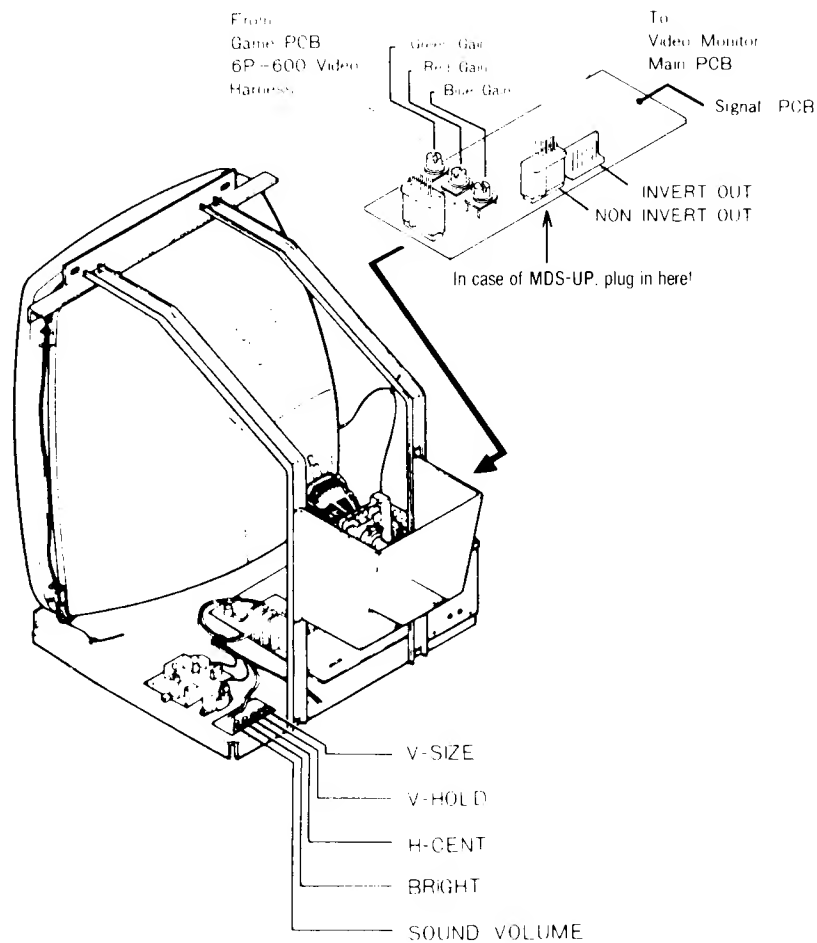
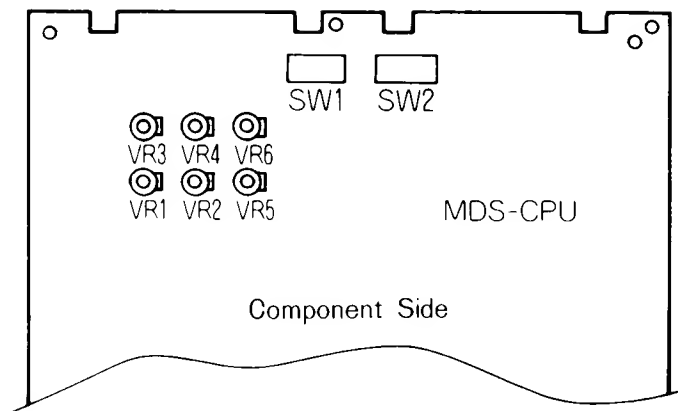


Fig. 3 Video Monitor

WARNING

Do not touch the inside of the Video Monitor.
It contains many parts supplied with high voltage.

MDS P.C. Board



- Cautions:**
- (1) Since the Dip Switch settings (SW1, SW2) may be changed by new game software, refer to the new game instructions attached.
 - (2) Do not touch the fixed variable resistors (VR1, VR2, VR3, VR4, VR5, and VR6), as they have already been preset and do not need adjustment.

III. MAINTENANCE AND REPAIR

A. Fuse Replacements

This game contains 4 fuses. Replace fuses only with the same type as listed below.

Specification of Fuses

(1) Main Fuse	U.S. : 5A 125V (90~120V) Europe : 3A 250V (200~240V)
(2) Power Supply Fuse	3A 125V MIDGET
(3) Video Monitor Fuse	4A 125V 0.3A 125V MIDGET

B. Cleaning

The exterior of the game, all metal parts and all glass parts can be cleaned with a nonabrasive cleanser.

C. Operation Panel

(1) Operation Panel Removal

Before repairing or replacing any switches or 8 way Controllers on the Operation Panel, unplug the game. Open the Service Door, and reach through the opening, and unlock the Clamps, located at each end on the underside of the Operation Panel.

(2) Micro-switch Replacement

Whenever you replace any micro-switch on the Operation Panel, a switch gap adjustment is needed as shown in Fig. 4. This adjustment is not necessary for the player option buttons.

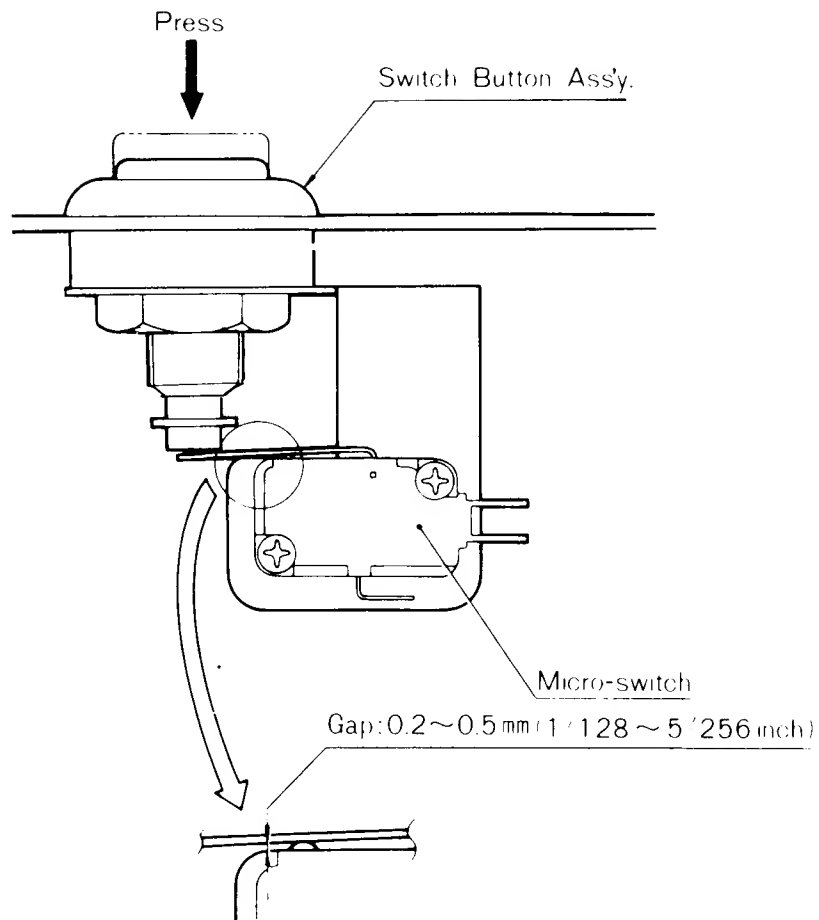


Fig. 4 Switch gap adjustment

(3) Lubrication for 8 way Controller

To maintain the 8 way Controller in good condition, lubricate the ball socket and 8 way Guide Plate approx. every 3 months. See Fig. 5.

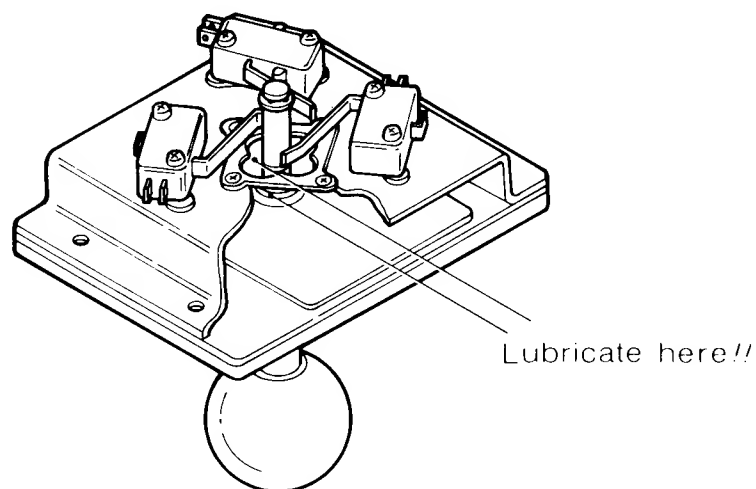


Fig. 5 Lubrication points

D. Front Screen and Video Monitor Removal

(1) Front Screen Removal

To remove the Front Screens, first remove the Control Panels by reaching through the Service Doors and releasing the Control Panel Clasps. Pull the bottom of the Front Screen toward you allowing it to drop into the slots. Then pull out toward center of game. See Fig. 6

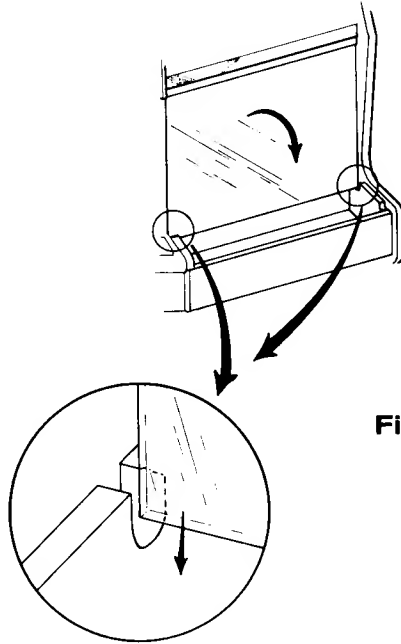


Fig. 6

(2) Video Monitor Removal

If you need to remove the Video Monitor, follow the instructions listed below. But the following procedure should only be performed by an experienced service technician.

WARNING

It is recommended the game be left unplugged for at least one hour before removing the Video Monitor. This will probably discharge the CRT, but extreme caution is still necessary.

- (a) Make sure game is unplugged.
- (b) Remove back door and unplug all the harnesses and cables from the Video Monitor.
- (c) Standing at the front opening of the game, remove the four mounting machine screws and flat washers. See Fig. 7.
- (d) Carefully lift the Video Monitor and pull out toward you.

WARNING

Use extreme caution and do not touch electrical parts of the yoke area with your hands or with any metal object in your hands.

Remove the four mounting bolts
and flat washers

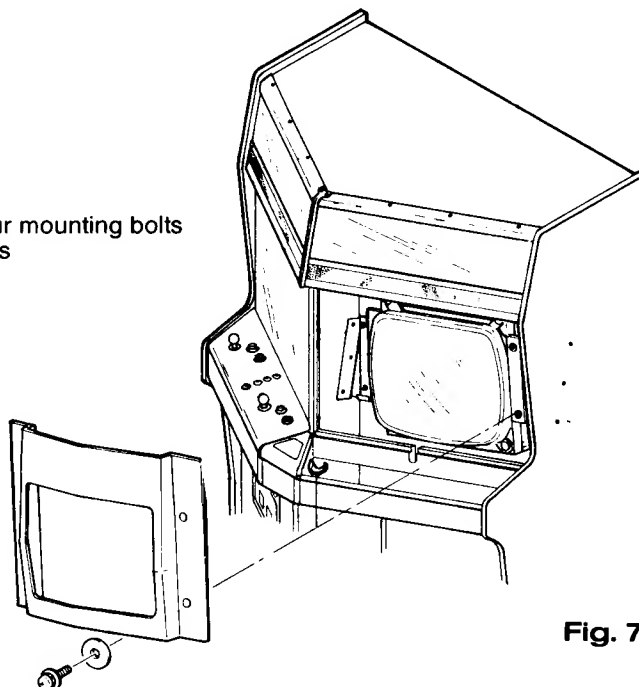
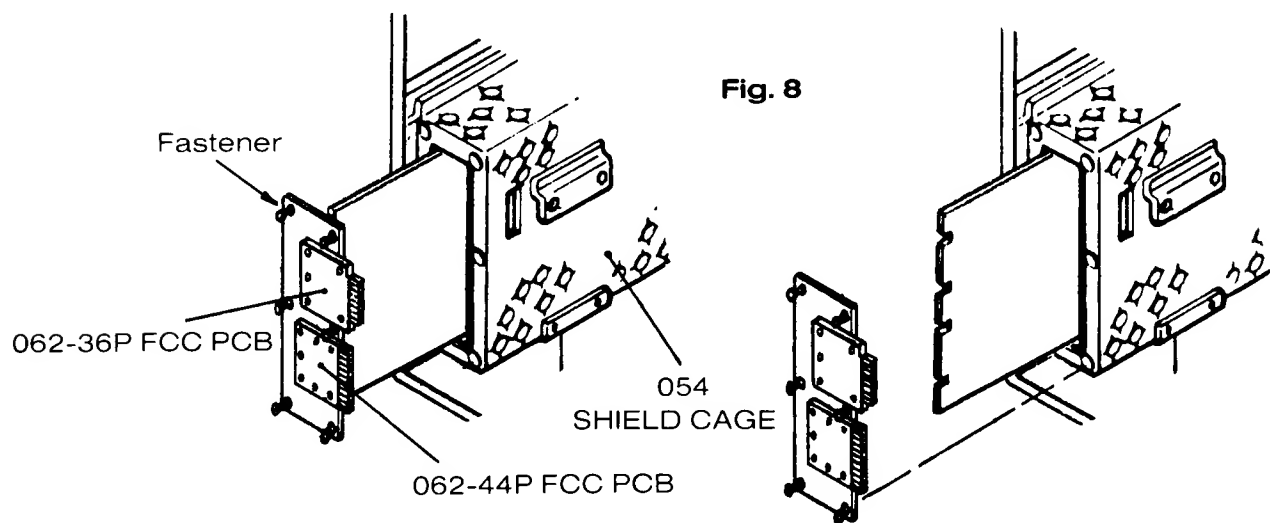


Fig. 7

E. Game PCB Removal

- (1) Make sure the game is unplugged!!
- (2) Open the rear door panel.
- (3) Remove the 36 pin and 44 pin edge connectors from the right side of the FCC-PCBs on the shield cover.
- (4) Pull out the 6 fasteners located on the perimeter of the shield cover.
See Fig. 8
- (5) Remove the 44 pin and 36 pin FCC short harnesses from the game P.C. board.
- (6) Remove the game PCB from the shield cage by carefully sliding it straight out of the wooden PCB guides.



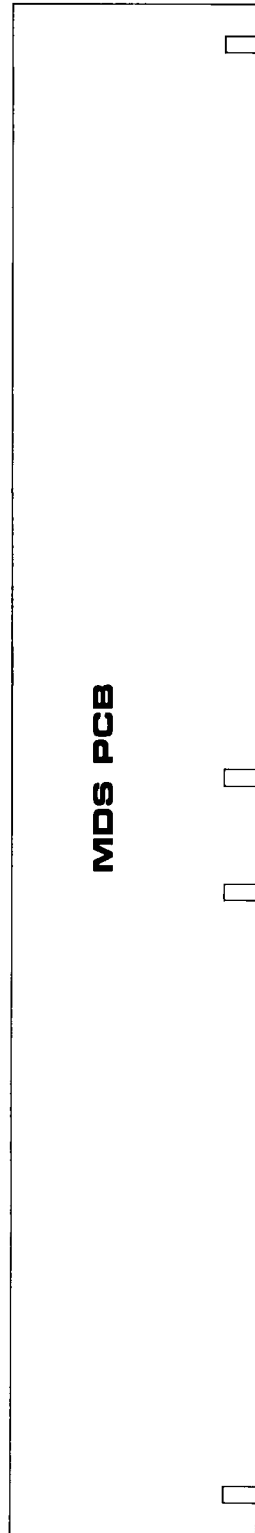
WARNING

A reversed connector will damage your PCB! If the connectors don't slip on easily, don't force them!

IV. RADIO FREQUENCY INTERFERENCE

In order to protect against the RFI radiated from this equipment, please comply with the following.

- (A) Do not use non-Nintendo parts!
- (B) Do not modify your game circuitry!
- (C) Do not modify the wiring harness and connections!
- (D) Connect this game only to a grounded 3-wire outlet.
- (E) After servicing the Game PCB, shut the Shield Cover completely with the Fasteners. See Fig. 8.



MDS PCB

062 44P FCC HARNESS

1	GND	BLACK	1	1
A	GND	BLACK	2	2
B	GND	BLACK	3	3
C	GND	BLACK	4	4
D	+5V	RED	5	5
E	+5V	RED	6	6
F	+5V	RED	7	7
G	+5V	RED	8	8
H	+12V	ORANGE	9	9
I	+12V	ORANGE	10	10
J			11	11
K	S COIN 1	BROWN	12	12
L	M COIN 1	BROWN	13	13
M	S COIN 2	RED	14	14
N	M COIN 2	RED	15	15
O	S RED	RED	16	16
P	M RED	RED	17	17
Q	S GREEN	BROWN	18	18
R	M GREEN	BROWN	19	19
S	V. GND	YELLOW	20	20
T	S BLUE	ORANGE	21	21
U	M BLUE	ORANGE	22	22
V	S SYNC	BLUE	23	23
W	M SYNC	BLUE	24	24
X			25	25
Y			26	26
Z			27	27
			28	28
			29	29
			30	30
			31	31
			32	32
			33	33
			34	34
			35	35
			36	36
			37	37
			38	38
			39	39
			40	40
			41	41
			42	42
			43	43
			44	44

062 44P FCC PCB

44P Edge Harness Connector

062 36P FCC HARNESS

1	GND	BLACK	43	43
A	GND	BLACK	44	44
B	S1 RIGHT	BROWN	45	45
C	M1 RIGHT	BROWN	46	46
D	S1 LEFT	RED	47	47
E	M1 LEFT	RED	48	48
F	S1 UP	ORANGE	49	49
G	M1 UP	ORANGE	50	50
H	S1 DOWN	YELLOW	51	51
I	M1 DOWN	YELLOW	52	52
J	S1 A SWITCH	YELLOW GREEN	53	53
K	M1 A SWITCH	YELLOW GREEN	54	54
L	S1 B SWITCH	LIGHT BLUE	55	55
M	M1 B SWITCH	LIGHT BLUE	56	56
N	S SELECT 1	BLUE	57	57
O	M SELECT 1	BLUE	58	58
P	S SELECT 2	PURPLE	59	59
Q	M SELECT 2	PURPLE	60	60
R	S SELECT 3	GRAY	61	61
S	M SELECT 3	GRAY	62	62
T	S SELECT 4	WHITE	63	63
U	M SELECT 4	WHITE	64	64
V	S2 RIGHT	BROWN	65	65
W	M2 RIGHT	BROWN	66	66
X	S2 LEFT	RED	67	67
Y	M2 LEFT	RED	68	68
Z	S2 UP	ORANGE	69	69
	M2 UP	ORANGE	70	70
	S2 DOWN	YELLOW	71	71
	M2 DOWN	YELLOW	72	72
	S2 A SWITCH	GRAY	73	73
	M2 A SWITCH	GRAY	74	74
	S2 B SWITCH	WHITE	75	75
	M2 B SWITCH	WHITE	76	76
	GND	BLACK	77	77
	GND	BLACK	78	78

062 36P FCC PCB

36P Edge Harness Connector

WIRING DIAGRAM

SCALE
DATE 3 10 84

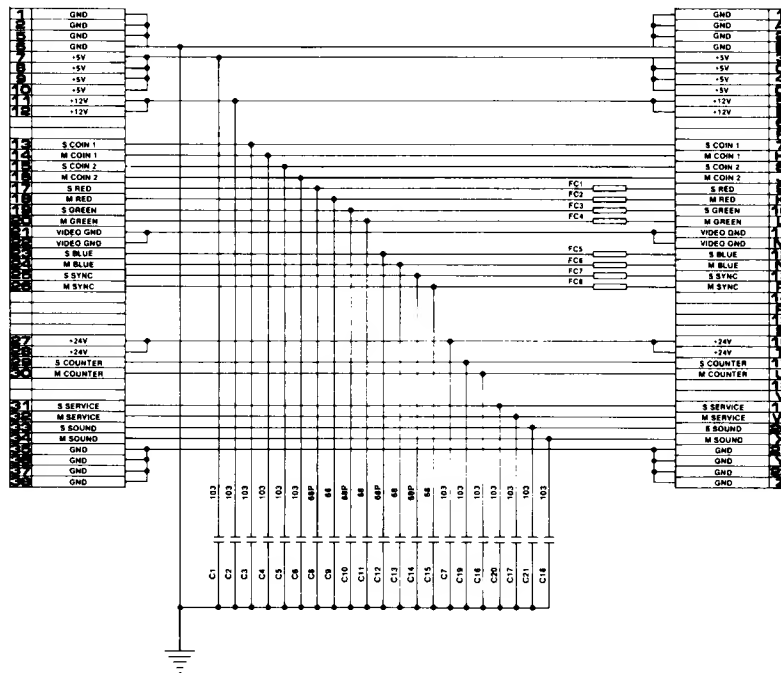
APPROVED BY
DRAWN BY JMM/MA

062 FCC PC Board

DRAWING NUMBER
Nintendo of America Inc.

40P Connector

44P Edge Connector



SCHEMATIC

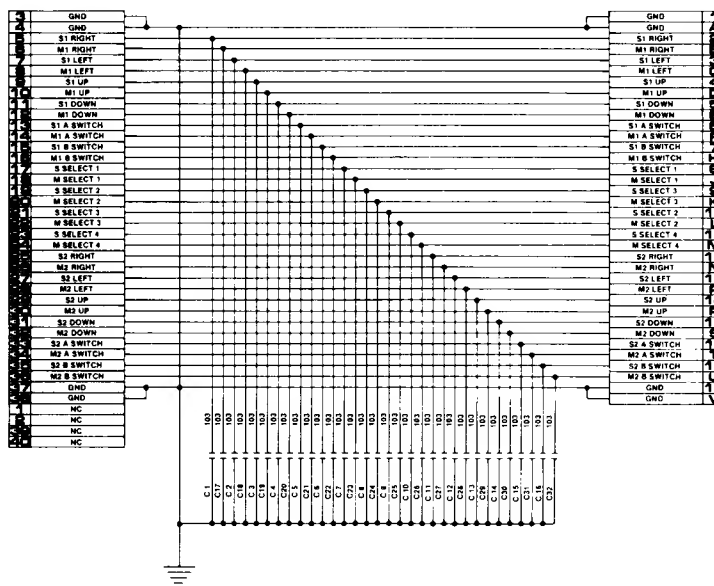
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062 44P FCC PC Board

Nintendo of America Inc.

40P Connector

36P Edge Connector

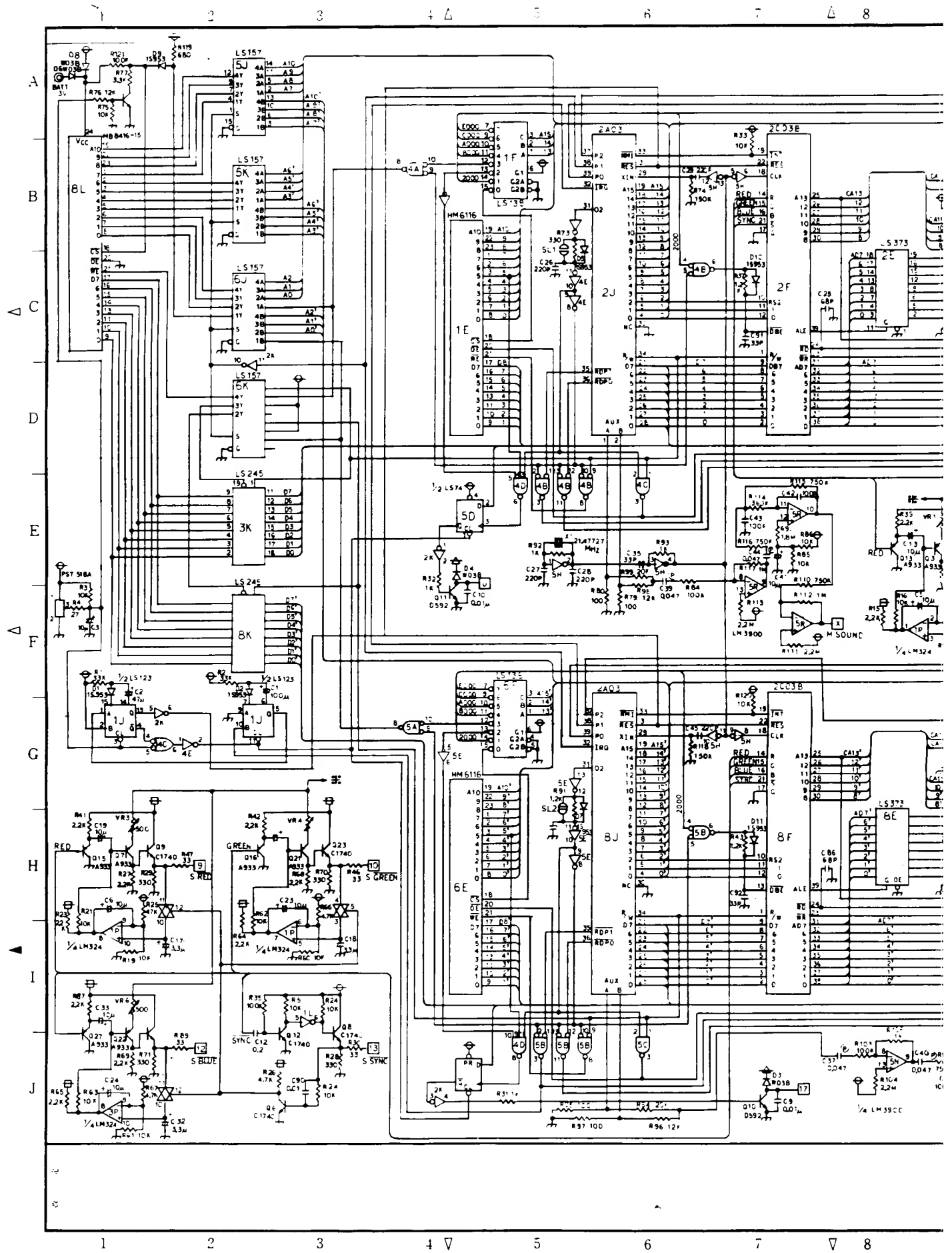


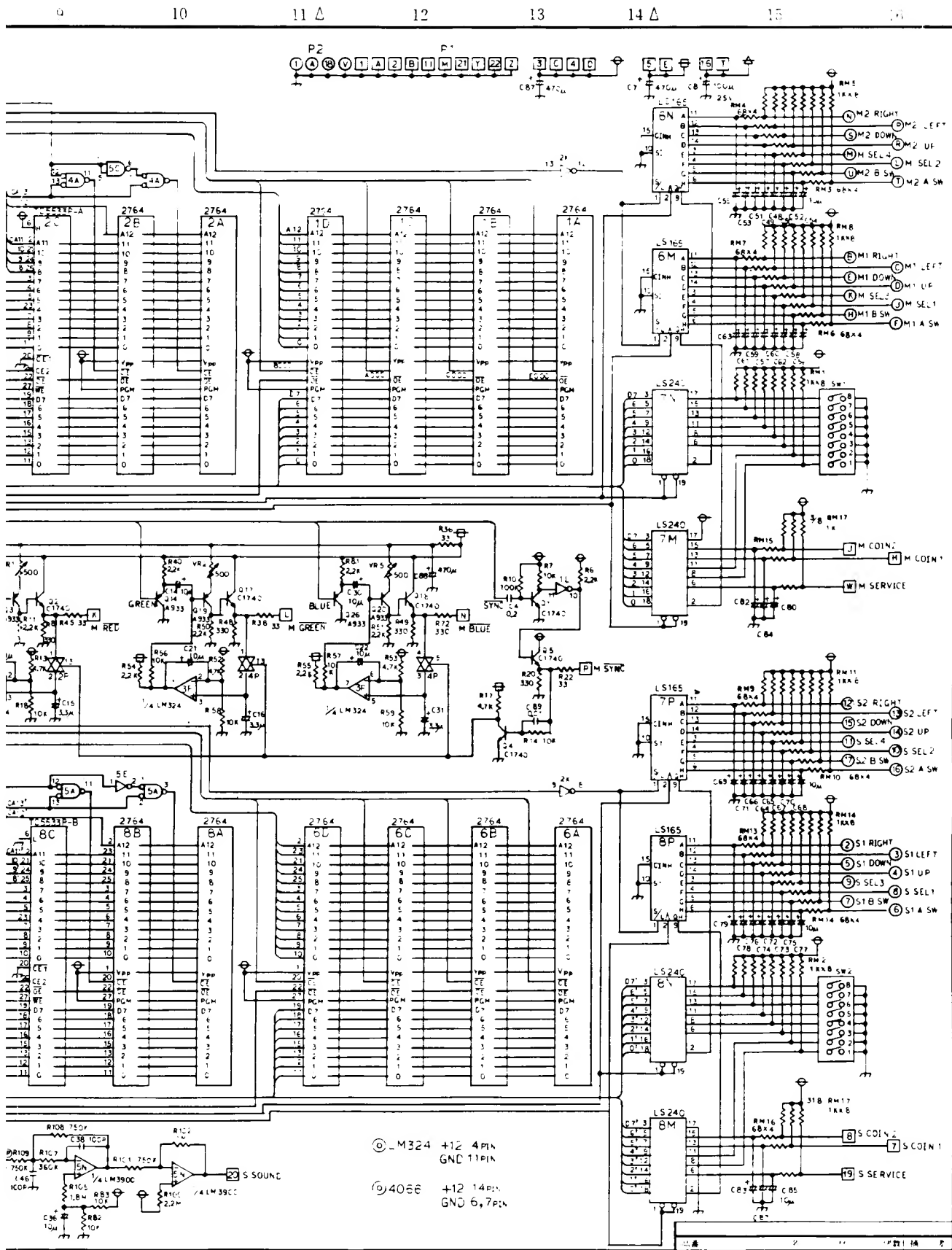
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062 36P FCC PC Board

Nintendo of America Inc.



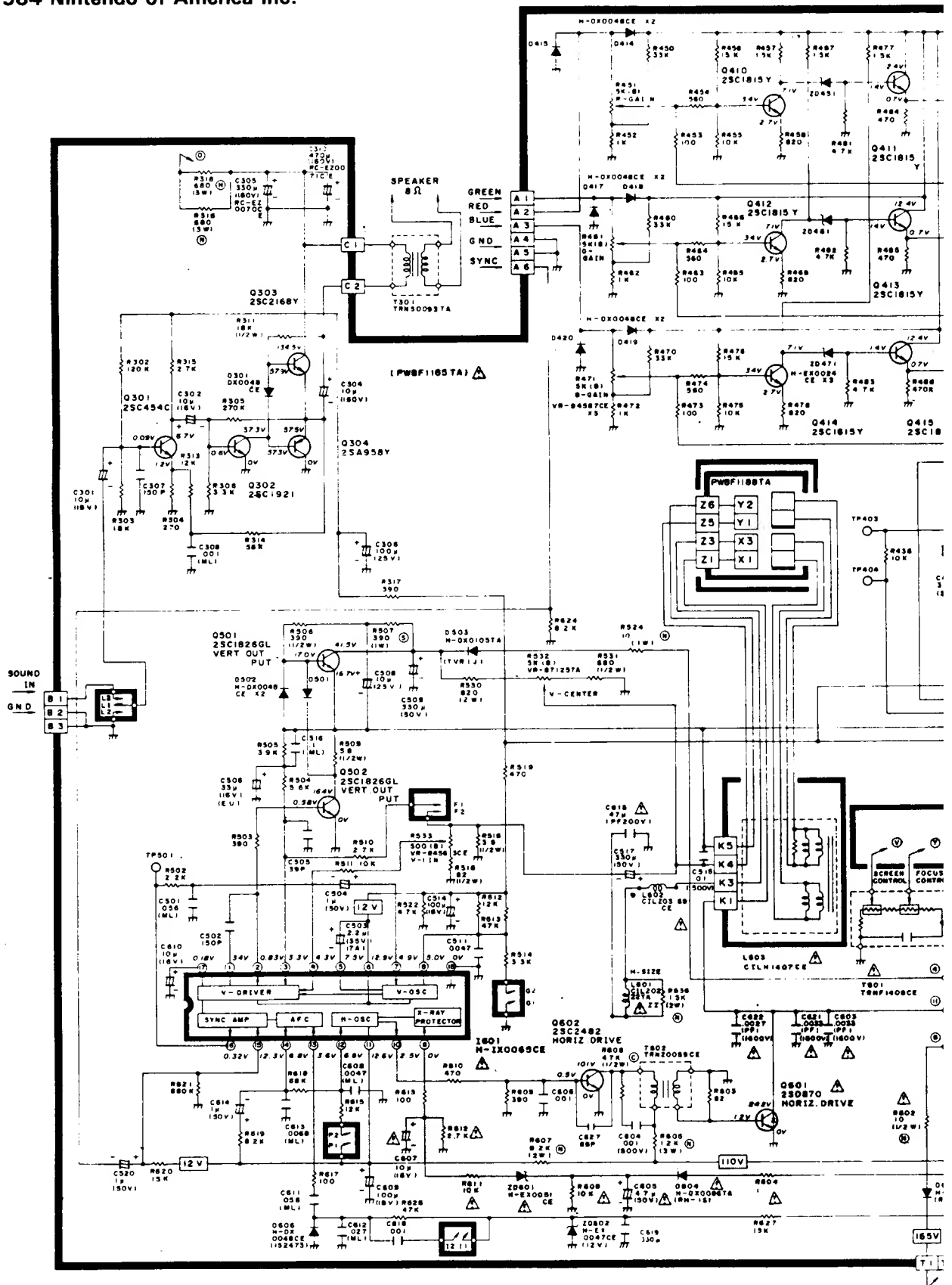


VII MDS P.C. BOARD SCHEMATICS

MDS-02-CPU S.59,1,14
 任天堂株式会社
 Nintendo Co. Ltd.

XM-2001N SCHEMATIC DIAGRAM

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X. PARTS LISTS

A. Body Parts — See Figure 9

ITEM	PART No.	DESCRIPTION
1	MDSA-01-01	Body
2	MDSA-01-71	Top Center Trim
3	MDSU-01-56R	Top Trim (Right)
4	MDSU-01-56L	Top Trim (Left)
5	TKGU-01-29	Fluorescent Lamp Ass'y
6	TKGU-01-29-01	Fluorescent Lamp
	TKGU-01-29-02	Lamp Starter (Glow Lamp)
7	*TENU-01-24-R (Tennis only)	Name Plate with Overlay (Right)
	*TENU-01-24-01R (Tennis only)	Name Plate Overlay (Right)
	MDSA-01-24-02	Name Plate Glass
	*TENU-01-24-L (Tennis only)	Name Plate with Overlay (Left)
	*TENU-01-24-01L (Tennis only)	Name Plate Overlay (Left)
8	MDSU-01-49-R	Speaker Grill (Right)
	MDSU-01-49-L	Speaker Grill (Left)
	TPPU-01-52	Monitor Support Bar
	MDSA-01-50	Center Monitor Mounting Bracket (Left)
9	MDSA-01-51	Center Monitor Mounting Bracket (Right)
	MDSA-01-53	Outer Monitor Bracket (Left)
10	MDSA-01-54	Outer Monitor Bracket (Right)
11	TKGU-20-00R	Video Monitor (20-5F) (Right) (Inverted Scan)
	TKGU-20-00L	Video Monitor (20-5F) (Left) (Standard Scan)
	TKGU-20-01	Video Picture Tube
12	MDSU-01-67	062 Monitor Front Cardboard
13	MDSU-01-68	062 Monitor Side Cardboard
	MDSA-01-23	Front Screen
14	MDSA-23-60R	Complete Operation Panel Ass'y (Right)
	MDSA-23-60L	Complete Operation Panel Ass'y (Left)
15	MDSA-01-73	Control Panel Center Piece
16	*TENU-11-14 (Tennis only)	Instruction Label
17	TKGU-01-31	Draw Latch
18	TMAU-14-17	Service Door ADD-S2 Only
19	TMAU-14-18	Coin Selector AD-81P
20	TMAU-34-16	Lamp Socket BA-9S
21	TMAU-34-17	Lamp BA-9S 6.3V 0.15A
	TMAU-11-21	Cam Tamper Protection Plate
	TMAU-34-19	Micro Switch ADD D2MC-5F1
22	TMAU-14-12	Service Door Lock
23	TMAU-11-14	Cam B 31R
24	TMAU-14-11	Cash Door ADD
25	TMAU-14-12	Cash Door Lock
26	TMAU-11-27	Cash Box ADD
27	MDSU-01-32	CS Frame 120 W Ass'y

*Note: These parts will change from game type to game type.

A. Body Parts, continued — See Figure 9

ITEM	PART No.	DESCRIPTION
28	TKGU-01-11	Game Counter
29	TKGU-01-33	Service Switch
	TMAU-11-20	CS Plate 120W (Only)
	MDSA-01-72	T-Molding (Black)
30	MDSA-01-52	Monitor Bracket

A. Body Parts, continued — See Figure 10

ITEM	PART No.	DESCRIPTION
1	TKGU-01-61	Vent Grill
2	MDSA-01-01-05	Back Door
3	TKGU-01-03	Back Door Lock (Key#6510)
	TKGU-01-03-01	Back Door Key Only (Key#6510)
4	TKGU-01-05	Cam A-Type (Back Door Lock)
5	MDST-21-11	P.C. Board Ass'y (Specify Game Type)
6	MDSU-01-01-11	062 FCC Shield Cover
7	MDSU-01-01-12	062 44P FCC P.C.B. Ass'y
8	MDSU-01-01-13	062 36P FCC P.C.B. Ass'y
9	MDSU-23-35	Snap In Fastener
	TPPU-01-01-14	FCC Sponge (Black)
	CHPU-01-01-15	Shield Cover Label
10	TKGU-01-08	Power Cord 5M
11	TKGU-01-10	Strain Relief Bushing
12	TKGU-01-65	Strain Relief Bushing Plate
	TKGU-11-08	Fuse 5A 125V
13	TKGU-01-30	Caster
14	CHPU-01-01-10	Shield Cage (054 Type)
15	MDSU-08-00	Power Supply (PP-1200A)
16	CHPU-08-01	Power Transformer (PT-1021A)
16	CHPU-18-01	Power Transformer (PT-1021B)
	CHPU-11-12	Power Transformer Bracket 100
	CHPU-11-13	Power Transformer Bracket 120
	TKGU-01-43	Speaker (16 cm)
	TKGU-01-07	Back Door Lock Stopper Plate
	MDSA-11-05	MDS-UP Back Door Label
	TPPU-11-25	FCC Label
	TKGU-11-17	Monitor Adjustment Label
	MDSU-20-09	Monitor Frame
	MDSU-23-61	MDS Manual & Schematics
	TENU-11-01	VS. Tennis Manual

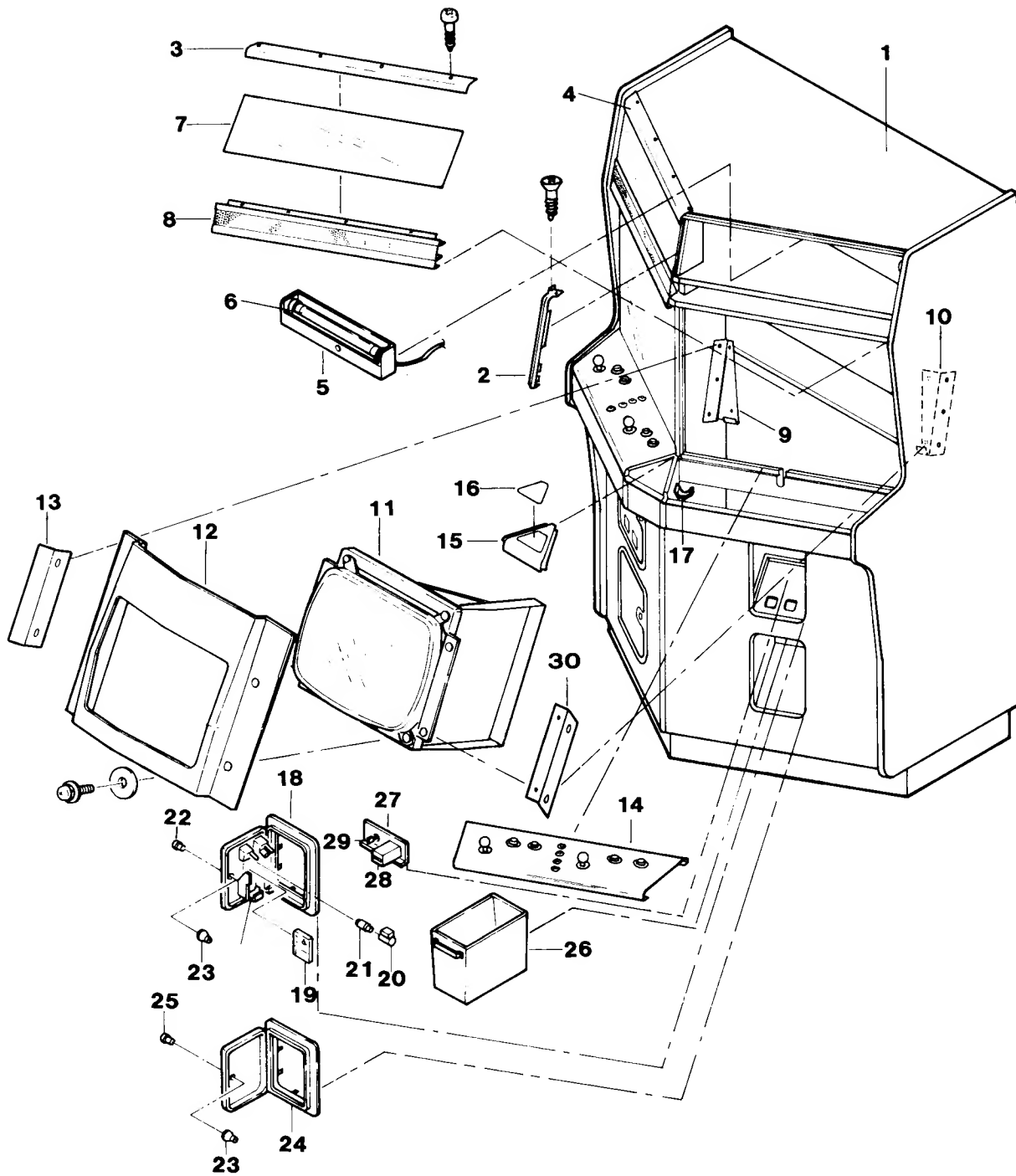


Fig. 9

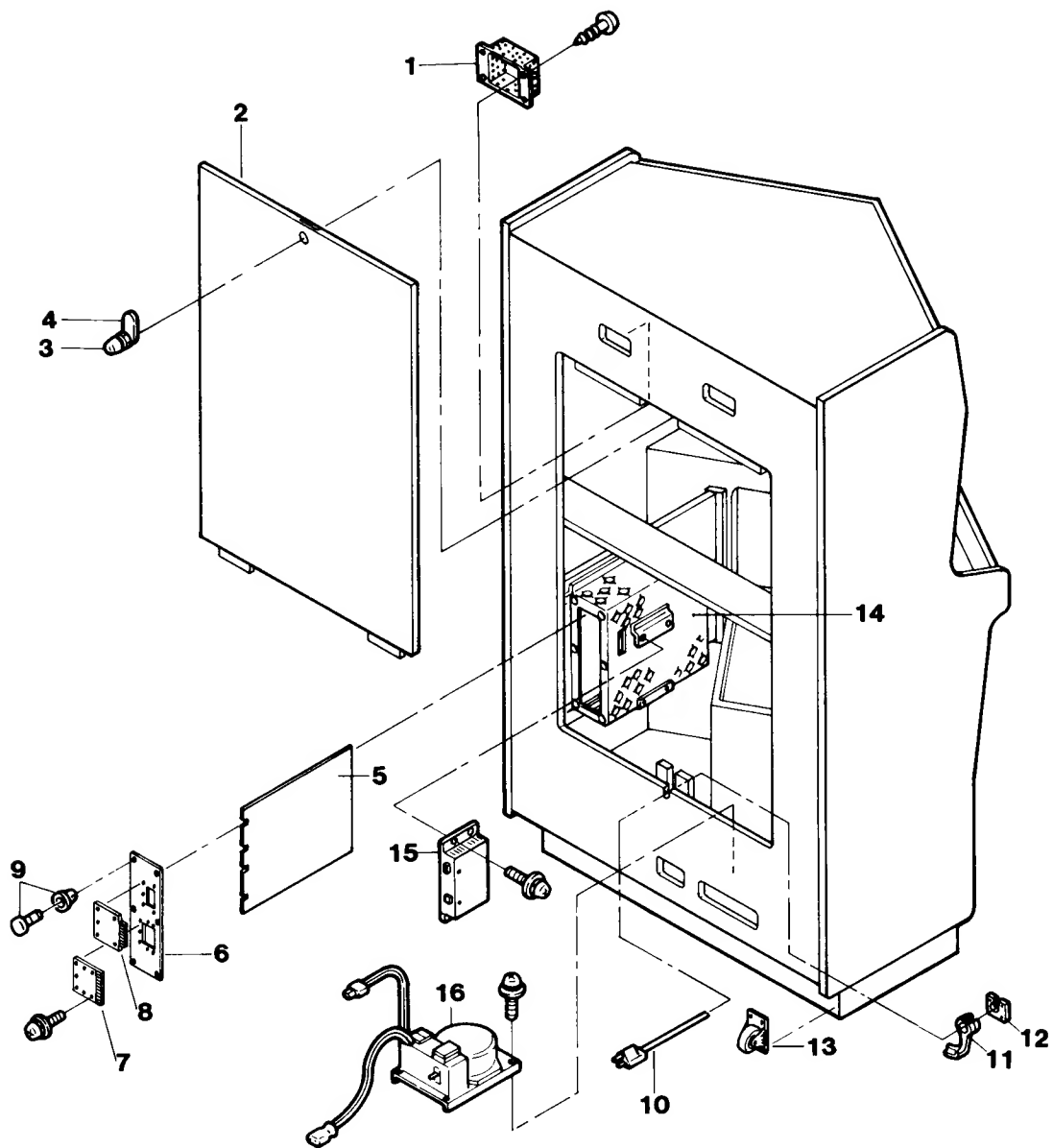


Fig. 10

B. Control Panel Assembly – See Figure 11

ITEM	PART No.	DESCRIPTION
1	MDST-14-12	8 Way Control Level Assembly
2	TKGU-23-21	Switch Collar
3	TNX-23-18	8 Way Guide Plate
4	TKGU-23-17	Switch Spacer
5	TKGU-23-16	Bearing Braker
6	TKGU-23-20	Spring Stopper
7	TKGU-23-22	Lever Spring
8	TKGU-23-23	E-Ring
9	TKGU-23-13	Micro Switch
10	TMAU-12-15	Lever Plate
11	TMAU-12-14	Control Knob Plate
12	TMAU-12-16	Control Knob Collar 8L
13	TMAU-11-18	Knob with Shaft 80.5L
15	MDSA-01-22R	Control Panel Base (Right)
15	MDSA-01-22L	Control Panel Base (Left)
16	TKGU-23-12	Switch Button Bracket
17	TMAU-34-18	Micro Switch VL12L (Straight)
18	MDSU-12-17	Black Sponge, 2 x 10 x 580L
19	TKGU-23-26	Nut Plate
20	TKGU-23-34	Pal Nut M16
21	MDST-12-21	Button Assembly (Black)
22	MDST-12-17	Button Assembly (Crimson)
23	MDSA-23-29	Switch Collar
24	MDSA-23-30	Switch Bezel
25	MDSA-23-31	Switch P163 C3RU
26	TMAU-11-19	Operation Panel Fastener B 38 W
27	TMAU-12-18	Collar — 34 x 28 x 7H

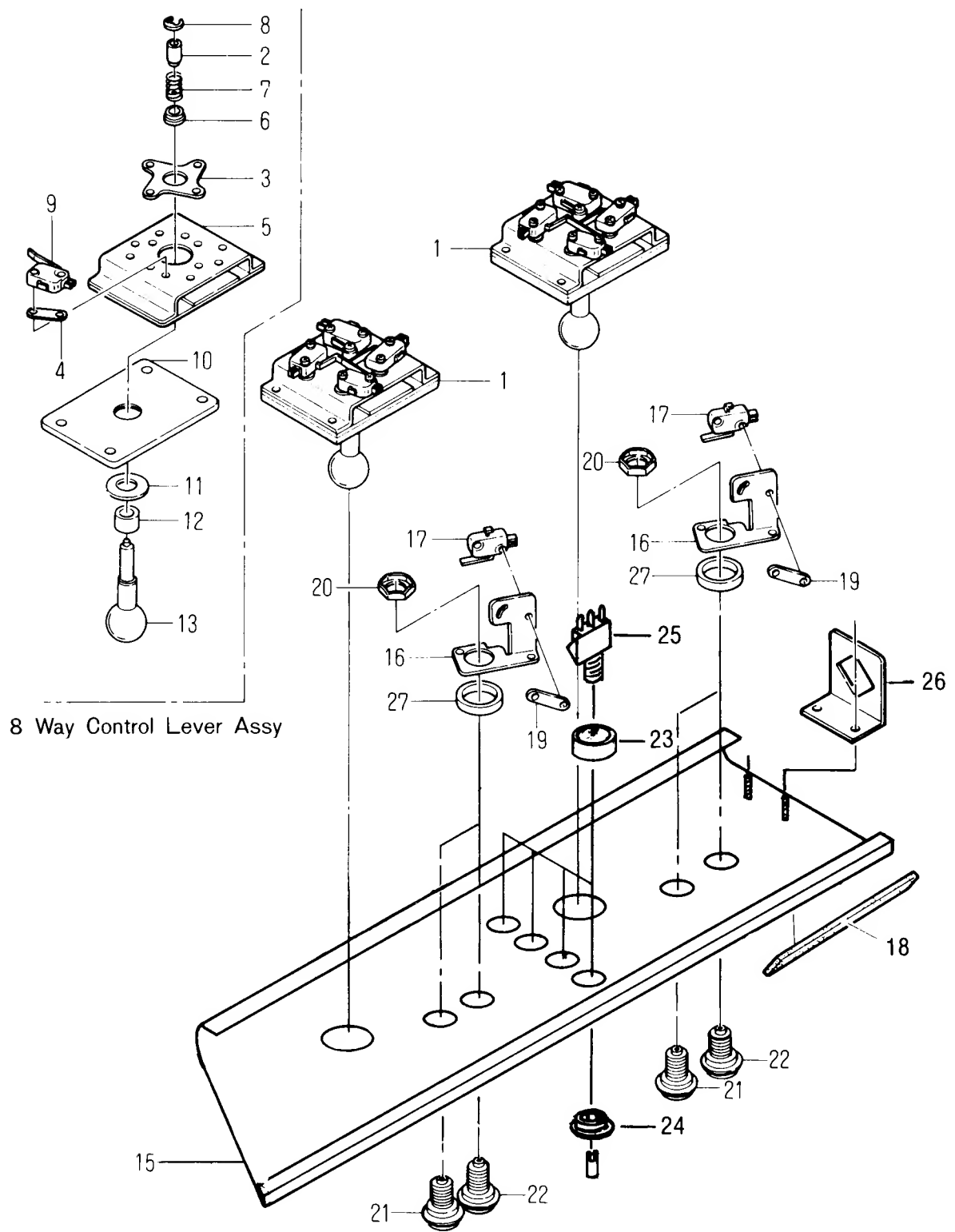


Fig. 11

C. Wiring Harnesses

PART No.	DESCRIPTION
MDSU-41-12	062 44P FCC Harness
MDSU-41-11	062 36P FCC Harness
MDST-41-13	UP 062 44P Edge Harness
MDST-41-14	UP 062 36P Edge Harness
MDST-41-11	UP 062 15P SW. Harness
MDST-41-12	UP 062 12P SW. Harness
TPPU-93-02	2P-400 Audio Harness (400 mm)
TPPU-93-07	6P-600 Video Harness (600 mm)
TMAU-41-14	4P-600 WL Coin Harness (600 mm)
TMAU-41-13	4P-800 Service Switch Harness (800 mm)
TMAU-41-12	3P-500 Game Counter Harness (500 mm)
TKGU-13-17	2P-860 Speaker Harness (860 mm)
MDSU-42-01	062 Grounding Ribbon 720L
MDSU-42-02	062 Grounding Ribbon 620L
MDSU-42-03	062 Grounding Ribbon 1320L
MDSU-42-04	062 Grounding Ribbon 1420L
MDSU-42-05	062 Grounding Ribbon 180L
MDSU-42-06	062 Grounding Ribbon 1600L
MDSU-42-07	062 Grounding Ribbon 530L
MDSU-42-08	062 Grounding Ribbon 840L
MDSU-42-09	062 Grounding Ribbon 1700L

D. MDS P.C. Board Assembly

PART No.	DESCRIPTION (Reference Designations and Locations)
MDST-21-11	P.C. Board Assembly
MDST-21-12	2A03 Microprocessor (2J, 8J)
MDST-21-13	HM6116 2k×8bit Static RAM, 250ns (1E, 6E)
MDST-21-14	MB8416-15 2k×8bit Static CMOS RAM 150ns (8L)
MDST-21-15	TC5533P-A 4k×8bit Static RAM (2C)
MDST-21-16	TC5533P-B 4k×8bit Static RAM (8C)
MDST-21-17	74LS00 Quad 2-input NAND LS TTL (4C, 5C)
MDST-21-18	74LS04 Hex Inverters LS TTL (1L, 2K, 4E, 5E)
MDST-21-19	74LS10 Tri 3-input NAND LS TTL (4D)
MDST-21-20	74LS32 Hex 2-input AND LS TTL (4A, 4B, 5A, 5B)
MDST-21-21	74LS74 Dual D-Flip Flops LS TTL (5D)
MDST-21-22	74LS123 Dual Retriggerable Single Shots LS TTL (1J)
MDST-21-23	74LS138 Dual 2 to 4 Demultiplexers LS TTL (1F, 6F)
MDST-21-24	74LS157 2 to 1 Data Selectors LS TTL (5J, 5K, 6J, 6K)
MDST-21-25	74LS165 8bit Shift register LS TTL (6M, 6N, 7P, 8P)
MDST-21-26	74LS240 Octal 3 State Bus Inverters LS TTL (7M, 7N, 8M, 8N)
MDST-21-27	74LS245 Octal 3 State Bus Tranceivers LS TTL (3K, 8K)
MDST-21-28	74LS373 Octal 3 State D-Latches LS TTL (2E, 8E)
MDST-21-29	74F04 Hex Inverters FAST TTL (5H)
MDST-21-30	4066 Quad Analog Switches C-MOS (2P, 4P)
MDST-21-31	LM324 Hex Operational Amplifiers (1P, 3P)
MDST-21-32	LM3900 Hex Operational Amplifiers (5N, 5R)
MDST-21-33	PST518A Reset IC (1K)
MDST-21-34	2SA933 Silicon PNP Transistor (Q3, Q7, Q13~Q16, Q19~Q22, Q26, Q27)
MDST-21-35	2SC1740 Silicon NPN Transistor (Q1, Q2, Q4~Q6, Q8, Q9, Q12, Q17, Q18, Q23~Q25)
MDST-21-36	2SD592 Silicon NPN Transistor (Q10, Q11)
MDST-21-37	1S953 Silicon Switching Diode (D1, D2, D5, D7, D9~D11)
MDST-21-38	W03B Silicon Diode (D3, D4, D6, D8)
MDST-21-39	27Ω 1/4W ±5% Resistor (R4)
MDST-21-40	33Ω 1/4W ±5% Resistor (R22, R30, R36, R38, R45~R47, R72, R89)
MDST-21-41	100Ω 1/4W ±5% Resistor (R79, R80, R95, R97)
MDST-21-42	330Ω 1/4W ±5% Resistor (R8, R20, R28, R29, R48, R49, R70, R71, R73, R91)
MDST-21-43	680Ω 1/4W ±5% Resistor (R119)
MDST-21-44	1KΩ 1/4W ±5% Resistor (R31, R32, R92, R93)
MDST-21-45	1.2KΩ 1/4W ±5% Resistor (R37, R43)
MDST-21-46	2.2KΩ 1/4W ±5% Resistor (R6, R11, R12, R14, R15, R23, R24, R27, R39~R42, R50, R51, R54, R55, R64, R65, R68, R69, R81, R87)
MDST-21-47	3.3KΩ 1/4W ±5% Resistor (R77)
MDST-21-48	4.7KΩ 1/4W ±5% Resistor (R13, R17, R25, R26, R52, R53, R66, R67)

D. MDS P.C. Board Assembly (continued)

PART No.	DESCRIPTION (Reference Designations and Locations)
MDST-21-49	10K Ω 1/4W \pm 5% Resistor (R3, R5, R7, R16, R18, R19, R21, R33, R56~R63, R75, R82, R83, R85, R86, R120)
MDST-21-50	12K Ω 1/4W \pm 5% Resistor (R76, R96, R98)
MDST-21-51	20K Ω 1/4W \pm 5% Resistor (R94, R99)
MDST-21-52	33K Ω 1/4W \pm 5% Resistor (R1, R2)
MDST-21-53	100K Ω 1/4W \pm 5% Resistor (R10, R35, R84, R103, R121)
MDST-21-54	150K Ω 1/4W \pm 5% Resistor (R74, R118)
MDST-21-55	360K Ω 1/4W \pm 5% Resistor (R107, R114)
MDST-21-56	750K Ω 1/4W \pm 5% Resistor (R101, R108, R109, R110, R115, R116)
MDST-21-57	1M Ω 1/4W \pm 5% Resistor (R102, R106, R112, R117)
MDST-21-58	1.8M Ω 1/4W \pm 5% Resistor (R90, R105)
MDST-21-59	2.2M Ω 1/4W \pm 5% Resistor (R81, R87, R100, R104)
MDST-21-60	1K Ω \times 8 Series Resistor Array (RM1, RM2, RM5, RM8, RM11, RM14, RM17)
MDST-21-61	68 Ω \times 4 Parallel Resistor Array (RM3, RM4, RM6, RM7, RM9, RM10, RM12, RM13, RM15, RM16)
MDST-21-62	33pF 50V Ceramic Disc Capacitor (C35, C91, C92)
MDST-21-63	68pF 50V Ceramic Disc Capacitor (C25, C86)
MDST-21-64	100pF 50V Ceramic Disc Capacitor (C38, C42, C43, C46)
MDST-21-65	220pF 50V Ceramic Disc Capacitor (C26~29, C34, C45)
MDST-21-66	0.01 μ F 50V Ceramic Disc Capacitor (C9, C10, C89, C90)
MDST-21-67	0.1 μ F 25V Ceramic Disc Capacitor (C100~C178)
MDST-21-68	0.2 μ F 12V Ceramic Disc Capacitor (C4, C12)
MDST-21-69	0.047 μ F 50V Film Capacitor (C37, C39, C40, C44)
MDST-21-70	3.3 μ F 16V A.I. Electrolytic Capacitor (C15~C18, C31, C32)
MDST-21-71	10 μ F 16V A.I. Electrolytic Capacitor (C3, C5, C6, C11, C13, C14, C19~C24, C30, C33, C36, C41, C47~C85)
MDST-21-72	47 μ F 16V A.I. Electrolytic Capacitor (C2)
MDST-21-73	100 μ F 16V A.I. Electrolytic Capacitor (C1)
MDST-21-74	100 μ F 25V A.I. Electrolytic Capacitor (C8)
MDST-21-75	470 μ F 16V A.I. Electrolytic Capacitor (C7, C87, C88)
MDST-21-76	500 Ω Variable Resistor. Red Cap (VR1, VR3)
MDST-21-77	500 Ω Variable Resistor. Green Cap (VR2, VR4)
MDST-21-78	500 Ω Variable Resistor. Blue Cap (VR5, VR6)
MDST-21-79	21.47727MHz Crystal (X1)
MDST-21-80	8 position dip switch (SW1, SW2)
MDST-21-81	28P IC socket (1A, 1B, 1C, 1D, 2A, 6A, 6B, 6C, 6D, 8A, 8B)
MDST-21-82	40P IC socket (2F, 2J, 8F, 8J)
MDST-21-83	Type 32-4 (UM3 \times 2) Battery Case
MDST-21-84	Bolt with washer M2.6
MDST-21-85	Flat washer M2.6
MDST-21-86	Nut Plate M2.6
MDST-21-87	Dry Battery "AA" T18L Beaded tie

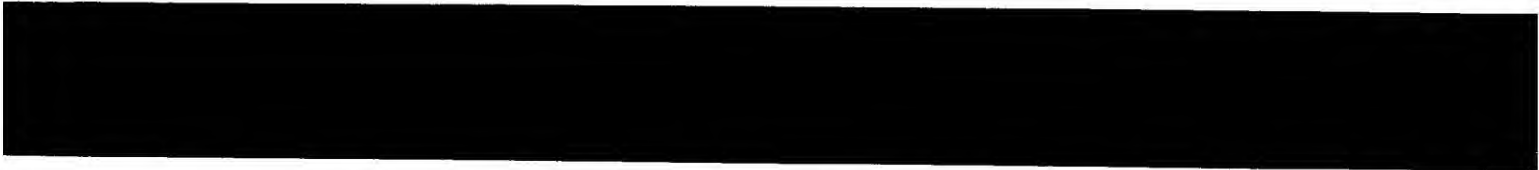
E. Power Supply

PART No.	DESCRIPTION
MDSU-08-00	Power Supply Unit (PP-1200A)
MDSU-08-01	Transistor 2SC2562 or 2SC3239 (Q2)
MDSU-08-02	Transistor 2SC2749 or 2SC2938 (Q3)
MDSU-08-03	Photo Coupler* (S22MD1V) or (TLP541G) (PC1)
MDSU-08-04	Photo Coupler (PC614) (PC2)
MDSU-08-05	Hybrid IC (3D-3000) (IC1)
MDSU-08-06	IC (MPC78M24) (IC2)
MDSU-08-07	IC (TL431CLP) (IC3)
MDSU-08-08	IC (MPC78M12) (IC4)
MDSU-08-09	Transformer (3D-0173) (TR)
MDSU-08-10	Choke Coil SC2A (L1)
MDSU-08-11	Choke Coil SF-C27-00105-01 (L2)
MDSU-08-12	Fuse Holder 0G751-0062
MDSU-08-13	Fuse 3A 125V
MDSU-08-14	Resistor 5.1 OHM 5W (Cement) (R1)
MDSU-08-15	Resistor 30 OHM 5W (Cement) (R10)
MDSU-08-16	Resistor 100 OHM 5W (Cement) (R16)
MDSU-08-17	Resistor 510 OHM 5W (Cement) (R20)
MDSU-08-18	Resistor 20 OHM 5W (Cement) (R22)
MDSU-08-19	Resistor (carbon) 100 KOHM $\frac{1}{2}$ W (R3, 14)
MDSU-08-20	Resistor (carbon) 100 OHM $\frac{1}{2}$ W (R5)
MDSU-08-21	Resistor (carbon) 5.6 OHM $\frac{1}{2}$ W (R18, 19, 21)
MDSU-08-22	Resistor (carbon) 820 OHM $\frac{1}{2}$ W (R13)
MDSU-08-23	Resistor (carbon) 1 KOHM $\frac{1}{4}$ W (R4, 6, 15)
MDSU-08-24	Resistor* (carbon) 47 KOHM or 10 KOHM $\frac{1}{4}$ W (R7)
MDSU-08-25	Resistor (carbon) 27 KOHM $\frac{1}{4}$ W (R8, 17)
MDSU-08-26	Resistor (carbon) 100 OHM $\frac{1}{4}$ W (R9, 11, 12, 23, 24)
MDSU-08-27	Resistor (carbon) 1.8 KOHM $\frac{1}{4}$ W (R25)
MDSU-08-28	Resistor (carbon) 2.7 KOHM $\frac{1}{4}$ W (R26)
MDSU-08-29	Variable Resistor 50 KOHM (VR1)
MDSU-08-30	Variable Resistor 2 KOHM (VR2)
MDSU-08-31	Film Capacitor 0.047MF 630V (C1,4)
MDSU-08-32	Film Capacitor 0.22MF 250V (C10, 28, 29)
MDSU-08-33	Ceramic Capacitor 2200PF 2KV (C2, 3, 11, 14, 15, 18)
MDSU-08-34	Electro Capacitor 330MF 200V (C5)
MDSU-08-35	Electro Capacitor 100MF 50V (C16, 24)
MDSU-08-36	Electro Capacitor 4.7MF 50V (C7)
MDSU-08-37	Electro Capacitor 47MF 35V (C8, 17)
MDSU-08-38	Electro Capacitor 100MF 25V (C25)
MDSU-08-39	Electro Capacitor 3300MF 10V (C19, 20, 21, 22, 23)
MDSU-08-40	Mylar Capacitor 1000PF 50V (C12)
MDSU-08-41	Mylar Capacitor 0.01MF 50V (C6, 9, 27)
MDSU-08-42	Mylar Capacitor 0.1MF 50V (C13)

*Note: The 522MDIV uses R7 of 47 KOHM and the TLP541G uses R7 of 10 KOHM.

E. Power Supply (continued)

PART No.	DESCRIPTION
MDSU-08-43	Mylar Capacitor 0.047MF 50V (C26)
MDSU-08-44	Bridge Rectifier S4V840 (D1)
MDSU-08-45	Diode 1S954 (D3)
MDSU-08-46	Diode 1S1835 (D6, 7, 10, 14)
MDSU-08-47	Diode 30DF2 (D11, 15)
MDSU-08-48	Diode CTB-33S (D12)
MDSU-08-49	Zener Diode RD 5.1EB3 (ZD1, 5.1 Volt)
MDSU-08-50	Thyristor 5P2M (Q1)
MDSU-08-51	Connector 1 (CON1)
MDSU-08-52	Connector 2 (CON2)



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